



LANDAU  
ASSOCIATES,  
INC.

Geoenvironmental Engineering and Technologies

COLSF  
Colbert 7.3 V1

September 28, 1989

Mr. Neal Thompson  
U.S. Environmental Protection Agency  
Park Place Building  
1200 Sixth Avenue  
Seattle, WA 98101

**RE: RESPONSES TO EPA/ECOLOGY COMMENTS  
ON THE COLBERT LANDFILL REMEDIAL DESIGN/REMEDIAL ACTION  
QUALITY ASSURANCE PROJECT PLAN**

Dear Mr. Thompson:

Contained herein are responses to U.S. Environmental Protection Agency (EPA) and Washington State Department of Ecology (Ecology) comments submitted on August 30, 1989, on the Colbert Landfill Draft Remedial Design/Remedial Action Quality Assurance Project Plan (QAPjP), which includes the Field Sampling Plan. The written responses to the combined EPA/Ecology comments have been prepared by Landau Associates, Inc. (Landau), Spokane County's engineering consultant for the Colbert Landfill Remedial Design/Remedial Action Project. Comments and responses are presented below, and are formatted in the same manner as in EPA's August 30, 1989, letter. Also enclosed are ten copies (five copies for Ecology) of the revised QAPjP, which reflects the changes described in the written responses.

**QAPjP COMMENTS/RESPONSES**

**o Comment #1:**

The plan lacks direction in terms of data quality objectives (DQO). For example (as best I can assess), the DQOs for this project are for further characterization, the design and implementation of a pilot ground water treatment system, evaluation of the pilot treatment system, and to design and implement a final ground water treatment system. These are

**USEPA SF**



**1414538**

not DQOs, and it is difficult to assess if the sampling and analysis they are proposing for this project will meet the needs of the final data users. This area needs considerable work. Once the DQOs have been defined, I would expect changes in other portions of the Plan to follow.

**Response:**

A qualitative discussion of the DQOs has been added to Section 1.3 of the Plan.

o **Comment #2:**

The air monitoring is fairly well described in terms of sample collection. However, issues such as where or when samples should be collected to meet the objectives of the project are completely absent.

**Response:**

Exact details of where, when, flow rate, and duration of air sample collection will be based on data collected during the early stages of Phase I, and will depend on the mass loading to the treatment system and local weather patterns. After local weather patterns have been established and the anticipated mass loading to the pilot stripping tower is determined, specific air sampling network information will be developed and submitted to EPA and Ecology prior to implementation. Air sampling will be performed according to the specifications given in the NIOSH method.

o **Comment #3:**

No laboratory has been identified in this plan. This is not a significant issue; however, it would be useful to have a Lab QA Plan to review with this QAPjP and to review the quality assurance protocols used by the receiving lab.

**Response:**

As the laboratory has not been selected at this time, we are unable to include the Lab QA Plan in the QAPjP. However, after the laboratory has been selected, Landau will request the lab to send a copy of the Lab QA Plan to the EPA and Ecology.

o **Comment #4:**

The list of chemical parameters is quite limited in terms of project analytical scope. Part of the Phase I activities are directed to further characterize the nature and extent of the historical landfill releases. This is especially true for areas outside the landfill boundaries, west of the Little Spokane River in the deep aquifer. At a minimum, the report should provide a full list of Method 8010 parameters throughout this Phase of the work.

**Response:**

For volatile organics analysis, the Consent Decree Scope of Work requires analysis for only the six constituents of concern. However, Landau will analyze the first round of ground water samples from each well, and treatment system influent and effluent samples for the full Method 8010 list. Analyses will be abbreviated to the six constituents of concern following the first round of sample analysis, unless other volatile compounds are present in significant concentrations. The QAPjP has been amended to reflect this addition.

o **Comment #5:**

The lack of attention toward soil sampling during drilling activities seems like a missed opportunity. Soil sampling is identified throughout the project, but for what reason? It could be extremely valuable to have chemical and geological characterization in the direction of the west deep aquifer plume.

**Response:**

The Consent Decree Scope of Work does not include chemical analysis of soil samples. Selected soil samples will be tested for physical parameters, including: grain size distribution, unit weight, and water content. However, chemical analysis of soil samples is not planned at this time.

o **Comment #6:**

Section 4.1.7 Filling Sample Bottles. Vials for VOA should not be refilled as stated in text. If bubbles are present, the sampler should replace the bottle and perform the sample collection again.

**Response:**

SW-846 specifies refilling; Ecology has concurred in this. Refilling will be permitted unless clear technical reasons why VOA vials cannot be refilled can be identified. Refilling will not affect the preservation of the sample. Any adsorption of contaminants onto the sides of the container is expected to be negligible.

o **Comment #7:**

Section 6.1 Laboratory Instruments. The opening paragraph describes the lab calibration requirements as "USEPA CLP Program Statements of Work (SOW)." This covers the calibration issues, however, what requirements are set forth for the lab concerning performance?

**Response:**

Landau has revised this Section to include calibration and performance measures included in the EPA or NIOSH method. Reference to the CLP SOW has been omitted.

o **Comment #8:**

Section 7.0, Page 1., Analytical Procedures. In the second paragraph the text specifies "QC checks and decision criteria" for quality control requirements. The analytical method or CLP procedures and guidelines are identified as this criteria. It should be clear which criteria applies to the assessment of the data produced. If CLP criteria will be used, please identify those sections from the SOW (referenced in Section 6.0). If SW-846 methods will be followed, then clearly state the review or assessment criteria.

**Response:**

Landau has revised Section 7.0. Reference to the CLP SOW has been omitted.

o **Comment #9:**

Section 7.0, Table QA-7.1. The table lists the detection limit of Methylene Chloride as "dependant on lab background levels." This detection limit estimation is not acceptable for at least two reasons: 1) methylene chloride is a target compound and was known to be disposed of at the landfill; and 2) if the lab has a background problem the lab still does not determine the requirements for the sampling and analysis.

**Response:**

Table QA-7.1 has been revised to include a quantification limit of 2.5 micrograms per liter for methylene chloride. The limit is consistent with DQOs and effluent discharge criteria.

o **Comment #10:**

Section 13.0 Corrective Actions. This section describes what corrective actions may be needed for both field and lab operations. The field corrective action requirements are limited in scope and fail to incorporate any review or oversight role from outside parties in the event of a major field plan revision.

**Response:**

Section 13.0 has been revised.

o **Comment #11:**

The laboratory corrective actions are confusing. In accordance with the Plan corrective actions will be based on "old" (1986, 1987) SOWs. The plan includes two pages of quality control requirements based on the SOWs listed as corrective action procedures. These are not corrective actions, they are methods which could be used to assess whether corrective actions should be taken. Furthermore, Method 8010 is a gas chromatographic non-mass spectral-based analysis and is not included in the current SOWs, or even the old SOWs listed in the plan. Therefore, I am confused how the SOWs will be applied to the data, how the data will be assessed, or what corrective actions will be taken.

**Response:**

As stated in response to comment #10 above, Section 13.0 has been revised. Reference to the CLP SOW has been omitted.

o **Comment #12:**

Section 9.1.6 Lab Matrix Spike Duplicate. The lab duplicate spike guidelines from the CLP SOWs indicated do not include parameters such as TOX, sulfides, nitrate, and chloride. The SOWs indicated are not designed for Methods 8010.

**Response:**

Reference to the EPA Statement of Work has been replaced with reference to procedures given in the EPA or NIOSH method. These procedures provide matrix spike duplicate guidelines for TOX, sulfate, nitrate, and chloride. (Sulfides have not been included in the QAPjP.)

o **Comment #13:**

Section 9.1.8 Lab Control Standard. Please identify where LCS will be used in accordance with SOWs and Methods cited.

**Response:**

Section 9.1.8 has been revised.

o **Comment #14:**

Section 9.1.3 Field Transfer Blank. Which parameters will be associated with this blank?

**Response:**

A minimum of 5 percent of the total number of ground water samples collected for volatile organics analysis will be collected as field transfer blanks.

o **Comment #15:**

Section 9.1.4 Blind Field Duplicate. How will the samples be split, in sequence?, physically?

**Response:**

Duplicate samples will be collected sequentially.

o **Comment #16:**

Section 9.1.5 Lab Matrix Spike. Why not have a duplicate spike for inorganic parameters to assess some degree of precision for the determination of accuracy.

**Response:**

A matrix spike duplicate for metals analysis is specified in Section 9.1.6.

o **Comment #17:**

How is a spike for hardness performed?

**Response:**

A spike for hardness can be performed with a commercially available calcium solution. However, as this spike is not required by the method, it has been omitted from the QAPjP.

o **Comment #18:**

Section 10, Page 1. Laboratory Audit. A laboratory Audit should occur before the samples are submitted. This would allow the QAO to verify if the lab can perform the work and avoid any loss of sensitive samples such as those intended for VOA.

**Response:**

No contract will be awarded to a laboratory until the Landau QAC is assured that the capabilities and past performance of the laboratory are sufficient to generate the required high quality data. The purpose of the laboratory audit, then, is to determine that the specific requirements of the QAPjP are being met during the analysis of the Colbert project samples. The laboratory audit schedule has not been changed in the QAPjP.

o **Comment #19:**

Section 7.0 Analytical Procedures. The Plan identifies CLP and SOW requirements for the assessment of the data produced. However, the method intended for volatile organics analysis is not consistent with the CLP or the SOW.

**Response:**

Reference to the EPA SOW has been replaced with reference to the EPA or NIOSH methods. As stated in response to comment #8 above, Section 7.0 has been revised.

o **Comment #20:**

The method for air analysis is not an EPA Method. As indicated in Table QA-7.2 on page 3, of Section 7.0, the air

method will be NIOSH Method 1003. No specification is given to sample sizes or sampling QC.

**Response:**

Reference to NIOSH methods 1003, 1022, and 1005 were added to the text. As stated in response to Comment #3 above, exact sample size will be dependent on data developed during Phase I activities, and the QAPjP will be amended to include this information. Air sampling QC will conform with the specifications given in the method. Field QA/QC is given in Section 4.3.3 of Appendix QA-A of the QAPjP.

o **Comment #21:**

Except for manganese and iron, the inorganic parameters indicated for ground water sampling are not included in the CLP SOWs.

**Response:**

Reference to CLP SOW was replaced with reference to the EPA method.

o **Comment #22:**

Please specify what would be "appropriate" for the anticipated data users concerning data validation. What criteria would allow the analytical procedures used by the laboratory to be modified? It should be noted that any review of deviations of proposed methods shall be in accordance with requirements set forth in EPA 530 SW-87-008 TEST METHOD EQUIVALENCY PETITIONS guidance.

**Response:**

Section 8.0 has been revised to contain more specific information on data validation. Section 7.0 has been revised to specify how analytical procedures may be modified.

o **Comment #23:**

Table QA-4.2 Sampling and Handling Records. The QAPjP identifies the Compendium of Superfund Field Operations Methods, as the source document for Table QA-4.2. The requirements under "Sample Label" records are not in agreement with the Superfund methods, i.e., the analytical lab shall not complete the sample label information for the samples collected.



**Response:**

Table QA-4.2 has been revised.

o **Comment #24:**

Section 4.0, Table QA-4.1. Samples collected for VOA shall be preserved in accordance with Regional policy. For ground water non-chlorinated sources, HCL is added to the sample to reduce the pH to less than 2.

**Response:**

Landau prefers not to preserve VOA samples unless technical reasons are identified to support doing so. The Clean Water Act (40 CFR 136)\* has specified that water samples analyzed for volatile aliphatic compounds only (as in Method 8010) may be held up to 14 days without preservation. This method is preferred as it does not require the transport of the VOA samples as hazardous materials.

o **Comment #25:**

Page QA-1-3 Line 13 add: ....Reauthorization Act, 1986) and the Washington State Hazardous Waste Cleanup Act, codified as chapter 70.105B RCW.

**Response:**

Added to text.

o **Comment #26:**

Page QA-9-4 Section 9.2 add: A limited number of samples may be split with EPA and/or Ecology which will provide interlab comparison when collected.

**Response:**

Added to text.

---

\* Reference given in Federal Register, Volume 47, No. 209, p. 43260, October 26, 1984.

o **Comment #27:**

Page QA-10-3 add: The Audit Reports and associated Corrective Action Reports should be submitted to Ecology and EPA once the audit is closed.

**Response:**

Added to text.

o **Comment #28:**

Page QA-11-1 End of Paragraph 1 correct:... the date and initials of the individual...

**Response:**

Corrected.

o **Comment #29:**

In Appendix QA-A Section 3, the list of analyses does not include the major ions commonly found in ground water. This comment has already been relayed to Brian Butler of Landau Associates. Brian agreed to include bicarbonate, cadmium, calcium, chloride, iron, magnesium, manganese, nitrate, potassium, silica, sodium, and sulfate in the list of ions for some wells. This ion sampling will be conducted in enough wells in the various aquifers to characterize the ground water quality in each aquifer.

**Response:**

Analysis will be performed for these constituents (except cadmium and silica) from one well location in each of the South, West, and East areas. Analyses of 4 to 7 ground water samples for these constituents are anticipated, since well clusters will be constructed in the West and East areas, and samples will be collected for all wells in a cluster. Although the analysis will be performed to an acceptable degree of precision and accuracy using standard laboratory methods, analysis of these parameters is not required in the Consent Decree Scope of Work and is being performed at the discretion of Spokane County; inclusion of detailed QA/QC information in the QAPjP for these constituents could imply an obligation for their performance.

o **Comment #30:**

In the same section, while discussing the list of parameters for evaluating the pilot treatment system for ground water treatment, toxic metals such as lead and zinc have not been included. These metals, if present, will affect the effluent discharge quality. Therefore, it may be worthwhile to look into these parameters.

**Response:**

Neither lead or zinc were determined to be constituents of concern during the RI/FS, or during development of the ROD. Consequently, it is not considered necessary to analyze for these constituents.

o **Comment #31:**

Another important parameter that should be looked into is the Alkalinity to determine the cause of hardness.

**Response:**

The data on major ions in the various aquifers (see comment #29) should yield sufficient information to characterize the ground water quality and to determine the source of the hardness, if necessary.

o **Comment #32:**

Page FS-3-5 Last Column, third one down: If the study extends beyond four weeks, and the weekly data does not indicate definite trends, then we recommend continuing weekly sampling. The quarterly sampling should also be reduced to monthly sampling in case the study extends more than four weeks.

**Response:**

The sampling frequency is specified in the Consent Decree Scope of Work. More frequent sampling will be considered if the study extends beyond four weeks; however, more frequent sampling would be at the discretion of Spokane County.

o **Comment #33:**

Page FS-4-2 end of last paragraph, clarify/add: ...as soon as the water level has recovered enough to allow collection of the necessary samples, which may require sampling on a subsequent day.

**Response:**

Added to text.

**FIELD SAMPLING PLAN COMMENTS/RESPONSES**

o **Comment #34:**

Section 3.0, Page 2. Second Paragraph. How will soil samples be scanned for organic vapors? Where will this information be recorded?

**Response:**

The air directly above the soil sample (as close to the soil as possible) will be monitored for organic vapors using a photoionization meter immediately as the soil is exposed to the atmosphere. Readings will be recorded on the log of exploration form. This information was added to Section 3.0.

o **Comment #35:**

The last paragraph on Page FS-3-2 states that "most" chemical analysis will be restricted to the "Constituents of Concern". Which chemical analysis will not be restricted?, and how much is a "limited number" for full Method 8010 constituents.

**Response:**

Ground water samples will be analyzed for the full Method 8010 list the first time samples are collected from each location. If no other contaminants are present in significant concentration, the analyses will be abbreviated to the six Constituents Of Concern. (See the response to comment #4.)

o **Comment #36:**

Table FS-3-1. Why is there so much uncertainty in the number of samples to be collected. For example, the ground water characterization will have between 19 and 59 samples, or the monitoring wells will have between 32 and 64 samples. Can the receiving lab schedule around this range of samples?

**Response:**

The total number of samples to be collected is dependent on the number of monitoring wells installed during Phase I, which will be determined based on the hydrogeologic conditions observed during installation of the initial Phase I monitoring wells and ground water contaminant distribution. The laboratory is aware of this sample range.

o **Comment #37:**

What about the details of quarterly sampling. Why is this left to one sentence in this table and not described elsewhere? Will there be long-term monitoring? Will vinyl chloride be included?

**Response:**

Quarterly sampling and long-term ground water monitoring are not required in the Consent Decree Scope of Work. Vinyl chloride will be included in the first set of sample analyses, and if detected in significant concentrations, subsequent analysis of samples collected from the same location will also be tested for vinyl chloride; vinyl chloride has not been detected in previous Colbert Landfill investigations.

o **Comment #38:**

The reference to Method 8010 in the "Analysis" column is misleading. The list proposed for VOA work is much shorter than the full Method 8010 analysis.

**Response:**

The full list of Method #8010 parameters has been added to Table QA-7.1.

o **Comment #39:**

It was noted in the QA Summary Table of Air Methods, Table QA-7.2, that three methods of analysis were to be used on the air samples collected. Does this mean that more than one sample collection tube is required, or can the lab analyze all the components of Methods 1003, 1022, and 1005 with the same tube extract?

**Response:**

The laboratory can analyze all components of NIOSH Methods 1003, 1022, and 1005 from the same tube extract. The analytical methods are very similar, but are written for specific compounds.

o **Comment #40:**

Section 4.0, Page 8. Please state exactly how many QC samples will be collected. Please identify the target parameters intended for duplicate samples.

**Response:**

The exact number of QC samples is dependent on the total number of samples collected. For the reasons described in response to comment #36 above, the total number of samples cannot be determined at this time. Consequently, the number of QC samples is specified as a percentage of the number of samples collected. The parameters for the duplicate sample will be the same as those specified for the original sample.

o **Comment #41:**

Chain-of-Custody Record. A place for the sampler's signature should be added to the Landau Chain-of-Custody Record.

**Response:**

Added to the text was the statement that the first person to relinquish custody of the samples will be the sampler.

o **Comment #42:**

Section 4.2.2, Stripping Tower QC Samples. The frequency of the QC samples should be designed to assess the sampling of the intended unit. This section seems to simplify the collection of QC samples as a requirement with no clear rationale stated. In this case, a trip blank and duplicate would be

appropriate. Replicates of the duplicate could provide further information on lab precision if long term monitoring is expected.

**Response:**

Stripping Tower QC sample description and collection are adequately described in Section 4.2.2 (page FS-4-14) of the Field Sampling Plan in Appendix QA-A of the QAPjP.

o **Comment #43:**

Section 4.3.3 Air QC Samples. Duplicate air samples should be collected from downgradient and upgradient areas. How will they assess sample breakthrough?

**Response:**

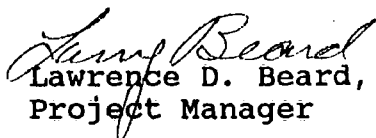
Duplicate air samples will be collected from upwind or downwind locations. Each solvent tube contains two sections of charcoal. Breakthrough will be assessed by sampling the second section for the presence of volatile organics. Corrective action will be taken when the concentration detected in the second tube is 10% of the first.

If you have any questions regarding either the responses to comments or the revised QAPjP, please contact me at 206/778-0907 or Dean Fowler of the Spokane County Public Works Department at (509) 456-3604.

Sincerely,

LANDAU ASSOCIATES, INC.

By:

  
Lawrence D. Beard, P.E.  
Project Manager

LDB/NBB/tmc

No. 124-01.20

cc: Michael Blum, Washington State Department of Ecology

Dean Fowler, Spokane County Public Works Department

attachments: 10 copies QAPjP

LANDAU ASSOCIATES, INC.